

REMARKS

Claims 1-23 remain pending in the application. Claims 1, 14, 16 and 20 have been amended for the Examiner's consideration. Support for the claim amendments can be found on paragraph [0018] of the instant published application No.

2004/0140714. Reconsideration of the rejection and allowance of the pending application in view of the following remarks are respectfully requested.

Interview of May 3, 2006

Applicant appreciates the courtesy extended by Examiner Schwartz in the Interview of May 3, 2006. In that interview, Applicant's representative pointed out, among other things, the written description rejection was improper because paragraph [0071] of the instant published application No. 2004/0140714 provides full and clear support for the features asserted to not comply with the written description requirement. In response, the Examiner agreed to reconsider the Section 112, 1st paragraph, rejection.

In response to Applicant's representative detailed arguments regarding the obviousness prior art rejections, the Examiner acknowledged that normally-open valve 24 in HALL was not controlled by a variable current, but pointed out that valve 32 did have this capability and that this document demonstrated that it was known to use a variable current on valves of the type disclosed in HALL. However, the Examiner did agree to consider Applicants' arguments upon the filing of a response to the instant Office Action.

35 U.S.C. §112 Rejection

Claims 1-13 were rejected under 35 U.S.C. §112, 1st paragraph. Applicants respectfully traverse the rejection for at least the following reasons.

In the Office Action, the Examiner asserted that the recited feature "after release of stepping on the brake pedal", which was added to claim 1 by the Amendment filed on November 18, 2005, was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that Applicants had possession of the claimed invention at the time that the present application was filed. Applicants respectfully disagree.

Applicants draw the Examiner's attention to Figure 5, and page 42, lines 10-21 of Applicants' specification. In this portion of the specification, Applicants disclose that "there is a small time lag before the strong creep state is obtained after the driver releases the stepping force on the brake pedal (1)", and that "during the time of such time lag, since the normally-open-type electromagnetic valve (6) remains closed, the braking force of the wheel brake (4) can be maintained". Applicants respectfully submit that at least this portion of the specification describes the "normally-open electromagnetic valve closable in order to temporarily maintain the brake fluid pressure of the wheel brake even after release of stepping on the brake pedal" recited in claim 1. Accordingly, no new matter was added by the amendment to claim 1.

For at least this reason, Applicants respectfully submit that the 35 U.S.C. § 112, 1st paragraph rejection of claims 1-13 is improper, and respectfully request the Examiner to withdraw the rejection.

35 U.S.C. §103 Rejections

Rejection of claims 1-3, 8, 11-17 and 19
over Alaze, Hall and Buschmann

In the Office Action, the Examiner rejected claims 1-3, 8, 11-17, 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Alaze et al. (U.S. Patent No. 5,167,442) in view of Hall (International Publication No. WO 95/19282) and Buschmann et al. (U.S. Patent No. 6,086,515). Applicants respectfully traverse these rejections for at least the following reasons.

Claim 1 is directed to a brake fluid pressure maintaining apparatus for a vehicle which includes, inter alia, a master cylinder that generates a brake fluid pressure when a driver steps on a brake pedal, a check valve interposed between the master cylinder and a wheel brake, and a normally-open electromagnetic valve which is closable to temporarily maintain the brake fluid pressure of the wheel brake even after release of stepping on the brake pedal. As recited clearly in claim 1, wherein the normally-open electromagnetic valve is controllable as follows:

when it is detected that the vehicle is stopped, the electromagnetic coil is energized and the normally-open electromagnetic valve is closed;

by changing the value of the current to be applied to the electromagnetic coil, an attracting force for closing the normally-open electromagnetic valve is changed; and

by setting the attracting force at a given value, the brake fluid pressure to be maintained on the wheel brake side is set.

Additionally, claim 14 recites the following:

means for reducing a fluid pressure of the wheel brake by adjusting an attracting force between a movable core and a fixed core of a normally-open electromagnetic valve when the brake fluid pressure of the wheel brake is higher than an attracting force of a given value,

wherein the normally-open electromagnetic valve is capable of the following function: when it is detected that the vehicle is stopped, an electromagnetic coil of the normally-open electromagnetic valve is energized and the normally-open electromagnetic valve is closed.

In the Office Action, the Examiner asserts that Alaze's valve unit 24 corresponds to Applicants' claimed normally-open electromagnetic valve, and presumes that Alaze's valve unit 24, although not specifically disclosed in Alaze, performs the relief function of Applicants' electromagnetic valve. Applicants respectfully submit that the Examiner's presumption is improper, as Alaze does not disclose or suggest that the valve unit 24 controls changing the value of a current applied to the electrical coil 56 of the valve unit 24, as Applicants recite in independent claim 1.

In any event, the Examiner acknowledges that Alaze does not specifically describe Applicants' claimed relief function, but asserts that Hall shows that it is well known to control the total biasing forces acting on a valve and the brake pressure levels in a wheel by changing the level of a current applied to a coil. Applicants respectfully disagree.

Hall is directed towards an electronic pressure relief system for traction control which includes an isolation valve 32 which is used to enable brake fluid to pass through a conduit 18 into a reservoir 14 when pressure is created within conduit 18 by a pump 30. See, e.g., the last paragraph of page 5 of Hall. Hall's pressure relief system also includes a normally open valve 24, which is disposed between the isolation valve 32 and a wheel brake 20. See Figure 1 of Hall. Although Hall's isolation valve 32 is electromagnetically actuated based on the application of a current, Applicants respectfully submit that Hall's isolation valve 32, while apparently participating in the control of the brake fluid pressure applied to Hall's wheel brake 20, does not function like the invention. In Hall, the brake fluid pressure is utilized to activate traction control, i.e., in the case of uncontrollable spinning when the vehicle fails to hold proper contact with

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the road surface. The invention, on the other hand, utilizes pressure control when a vehicle stop condition is detected and when the vehicle is on a sloping road.

Furthermore, Applicants submit that Hall does not disclose or suggest that the normally open valve 24 controls changing the value of a current applied to an electromagnetic coil of the valve 24.

Thus, Applicants respectfully submit that the combination of Alaze and Hall fails to disclose or suggest the combination of features recited in at least claim 1.

Further, as Hall's isolation valve 32 performs a function disparate from Alaze's valve unit 24 (i.e., relieving pressure in a conduit versus relieving pressure on a wheel brake), Applicants respectfully submit that it would not be obvious to combine the features of these valves in the manner suggested by the Examiner.

Applicants also submit that Buschmann fails to overcome the above-noted deficiencies of Alaze and Hall. That is, Applicants respectfully submit that the combination of Alaze, Hall and Buschmann fails to disclose or suggest a normally-open electromagnetic valve which is configured to control changing the value of a current to be applied to an electromagnetic coil to change an attracting force for closing the electromagnetic valve, and setting the attracting force at a given value to set brake fluid pressure to be maintained on a wheel brake side, as recited in Applicants' independent claim 1.

As to Buschmann, Applicants admit that there are different states to valves. But this reference does not compensate for the deficiencies of the remaining applied references, which appears to be admitted by the Examiner since Buschmann is being relied "only" to show typically states of valves. Buschmann shows a brake system to retain a vehicle on an inclined roadway when starting uphill. Buschmann shows output

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signals of the sensors are sent to the inputs E of an electronic controller 17 which evaluates the signals and furnishes braking pressure control signals through its outputs A for the actuation of the inlet and outlet valves 3, 4, 5, 6 and 7, 8, 9, 10 and the separating valve 15 and for switching on and off of the pump drive motor 11. Anti-lock control is performed in a known fashion by way of the inlet valves 3, 4, 5, 6 and the outlet valves 7, 8, 9, 10. But, as discussed above, Buschmann does not compensate for the deficiencies of the remaining applied references, which appears to be admitted by the Examiner since Buschmann is being relied "only" to show typically states of valves.

Nor has the Examiner identified in any of the applied documents a means for reducing a fluid pressure of the wheel brake by adjusting an attracting force between a movable core and a fixed core of a normally-open electromagnetic valve when the brake fluid pressure of the wheel brake is higher than an attracting force of a given value, wherein the normally-open electromagnetic valve is capable of the following function: when it is detected that the vehicle is stopped, an electromagnetic coil of the normally-open electromagnetic valve is energized and the normally-open electromagnetic valve is closed (claim 14).

Dependent claims 2, 3, 8, 11-17 and 19 are also submitted to be in condition for allowance for at least the reasons set forth above with respect to independent claims 1, 14.

For at least these reasons, Applicants respectfully submit that the 35 U.S.C. § 103(a) rejection of independent claim 1, 2, 3, 8, 11-17 and 19 is improper, and respectfully request the Examiner to withdraw the rejection and allow the claim.

Rejection of claim 20 over
Alaze, Hall and Buschmann

At page 4 of the Office Action, the Examiner broadly asserts that Alaze's device, as modified by Hall and Buschmann, is capable of functioning in the manner recited in claim 20. Applicants respectfully disagree.

Claim 20 recites, in part, the following:

means for adjusting a brake fluid pressure in the wheel brake on an ascending or descending slope by adjusting a current to a normally-open electromagnetic valve having an electromagnetic coil disposed between a movable core and a fixed core to increase or decrease an attracting force between the movable core and the fixed core,

wherein after the brake fluid pressure of the wheel brake is lowered to a given value under the control of the adjusting means, a value of the current applied to the electromagnetic coil is lowered to reduce the attracting force acting on the movable core, the brake fluid pressure of the wheel brake becomes higher than the attracting force that can close the normally-open electromagnetic valve, and the high brake fluid pressure of the wheel brake acts on a seal surface so that a valve body is separated from a valve seat of the seal surface against the attracting force to thereby open a valve hole so that the normally open electromagnetic valve is opened and in the opened state, the fluid pressure of the wheel brake is returned through the valve hole to the master cylinder to lower the fluid pressure of the wheel brake.

Applicants submit that Alaze fails to disclose or suggest that the current to the valve unit 24 is adjusted by an adjusting means, that brake fluid pressure of the wheel brake 14 is lowered to a given value under the control of such adjusting means, or that a value of the current applied to the valve unit 24 is lowered to reduce an attracting force acting on the armature 59. In fact, as discussed above, the electromagnetic valve of Alaze is not adjustable, as recited in the claimed invention.

Also, as discussed above, Hall's isolation valve 32 does not function in the same way as the invention. Applicants also submit that Hall fails to disclose or suggest that a current applied to the normally open valve 24 is adjusted by an adjusting means.

Applicants also submit that Hall fails to disclose that brake fluid pressure of the wheel

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brake 20 is lowered to a given value under the control of an adjusting means, or that a value of the current applied to the normally open valve 24 is lowered to reduce an attracting force on a movable coil. In fact, as discussed above, there is no adjustment of the Hall normally open valve 24, at all. If there is to be any interpretation, the isolation valve may be adjusted; however, the isolation valve is not configured to adjust a brake fluid pressure in the wheel brake on an ascending or descending slope by adjusting a current to an electromagnetic valve disposed between a movable core and a fixed core. Accordingly, Hall cannot show these features of the claimed invention.

Applicants also submit that Buschmann fails to overcome the above-noted deficiencies of Alaze and Hall. Thus, Applicants respectfully submit that the combination of Alaze, Hall and Buschmann fails to disclose or suggest a means for adjusting a brake fluid pressure in a wheel brake on an ascending or descending slope by adjusting a current to an electromagnetic valve disposed between a movable core and a fixed core to increase or decrease an attracting force between the movable core and the fixed core, where after the brake fluid pressure of the wheel brake is lowered to a given value under the control of the adjusting means, a value of the current applied to the electromagnetic valve is lowered to reduce the attracting force acting on the movable core, as recited in Applicants' independent claim 20.

Applicants submit that the Examiner has failed to identified in any of the applied documents a means for adjusting a brake fluid pressure in the wheel brake on an ascending or descending slope by adjusting a current to a normally-open electromagnetic valve having an electromagnetic coil disposed between a movable core and a fixed core to increase or decrease an attracting force between the movable core and the fixed core, wherein after the brake fluid pressure of the wheel brake is lowered

to a given value under the control of the adjusting means, a value of the current applied to the electromagnetic coil is lowered to reduce the attracting force acting on the movable core, the brake fluid pressure of the wheel brake becomes higher than the attracting force that can close the normally-open electromagnetic valve, and the high brake fluid pressure of the wheel brake acts on a seal surface so that a valve body is separated from a valve seat of the seal surface against the attracting force to thereby open a valve hole so that the normally open electromagnetic valve is opened and in the opened state, the fluid pressure of the wheel brake is returned through the valve hole to the master cylinder to lower the fluid pressure of the wheel brake (claim 20).

For at least these reasons, Applicants respectfully submit that the 35 U.S.C. § 103(a) rejection of independent claim 20 is improper, and respectfully request the Examiner to withdraw the rejection and allow the claim.

Rejection of claims 4-7, 18, 21 and 23

The Examiner rejected claims 4-7, 18, 21 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Alaze et al. in view of Hall and Buschmann et al., and further in view of Akamatsu et al. (U.S. Patent No. 5,771,933). Applicants respectfully traverse this rejection for at least the following reasons.

Applicants respectfully submit that Akamatsu et al., which is directed towards a three-position solenoid valve, fails to overcome the above-noted deficiencies of Alaze et al., Hall, and Buschmann et al. That is, Applicants respectfully submit that the combination of Alaze et al., Hall, Buschmann et al. and Akamatsu et al. fails to disclose or suggest a normally-open electromagnetic valve which is configured to control changing the value of a current to be applied to an electromagnetic coil to change an

attracting force for closing the electromagnetic valve, and setting the attracting force at a given value to set brake fluid pressure to be maintained on a wheel brake side, as recited in Applicants' independent claim 1.

For at least these reasons, Applicants respectfully submit that the rejection of dependent claims 4-7, 18, 21 and 23, which depend from claim 1, is improper, and respectfully request the Examiner to withdraw the rejection and allow these claims.

Rejection of claims 1-3, 8, 9, 14-17, 19 and 20
And Claims 4-7, 10-13, 18, 21 and 23.

In the Office Action, the Examiner also rejected claims 1-3, 8, 9, 14-17, 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Wagu et al. (Japanese Patent No. 2001225731) in view of Hall and Buschmann et al., and rejected claims 4-7, 10-13, 18, 21 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Wagu et al. in view of Hall and Buschmann et al., and further in view of Akamatsu et al. Applicants respectfully traverse the rejection for at least the following reasons.

In the Office Action, the Examiner asserts that

"due to the strong similarity between JP '731 and applicants design... the claimed features are believed to be readily apparent from the drawings of this reference."

The Examiner has provided Applicants with an English language translation of only Wagu's Abstract.

Applicants respectfully submit that neither Wagu's Abstract nor the drawings disclose a normally-open electromagnetic valve which is configured to control changing the value of a current to be applied to an electromagnetic coil to change an attracting force for closing the electromagnetic valve, and setting the attracting force at a given

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value to set brake fluid pressure to be maintained on a wheel brake side, as recited in Applicants' independent claim 1, or a means for reducing a fluid pressure of the wheel brake by adjusting an attracting force between a movable core and a fixed core of a normally-open electromagnetic valve when the brake fluid pressure of the wheel brake is higher than an attracting force of a given value, wherein the normally-open electromagnetic valve is capable of the following function: when it is detected that the vehicle is stopped, an electromagnetic coil of the normally-open electromagnetic valve is energized and the normally-open electromagnetic valve is closed (claim 14), or a means for adjusting a brake fluid pressure in a wheel brake on an ascending or descending slope by adjusting a current to an electromagnetic valve disposed between a movable core and a fixed core to increase or decrease an attracting force between the movable core and the fixed core, where after the brake fluid pressure of the wheel brake is lowered to a given value under the control of the adjusting means, a value of the current applied to the electromagnetic valve is lowered to reduce the attracting force acting on the movable core, as recited in Applicants' independent claim 20.

Wagu is directed to a brake fluid pressure control device with a normally open solenoid valve between a master cylinder and a wheel brake for allowing the closing of the valve when temporarily holding a brake fluid pressure of the wheel brake after canceling a braking operation. To accomplish these features, Wagu discloses in the Abstract that

a valve chest 34 is communicated with a first liquid pressure passages 21, 22 and a valve hole 31 is communicated with a second liquid pressure passages 31, 32 and a relief spring is provided between the moveable core 45 and a valve element 35 for providing a spring force for pushing the valve element 35 against a valve seat in the state of seating the valve element 35 to the valve seat 32.

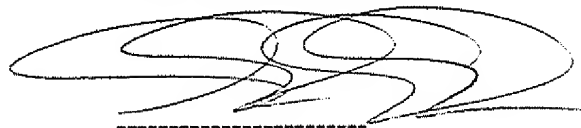
As can thus been seen, Wagu fails to disclose a means for adjusting a brake fluid pressure in a wheel brake on an ascending or descending slope by adjusting a current, nor does Wagu show controlling changing the value of a current and setting the attracting force at a given value. Additionally, as discussed above, Hall, Buschmann and Akamatsu also do not show the features of the claimed invention.

Applicants respectfully submit that the 35 U.S.C. § 103(a) rejections of claims 1-23 based on Wagu are improper and that these rejections be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant submits that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicant hereby makes a written conditional petition for extension of time, if required. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 19-0089.

Respectfully submitted,
Takayuki WAGU et al.

A handwritten signature in black ink, appearing to read 'Andrew M. Calderon', written over a horizontal dashed line.

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